PATENT SPECIFICATION

Application Date: Dec. 4, 1919. No. 30,394/19.
" " Mar. 19, 1920. No. 8266/20.
" " May 26, 1920. No. 14,396/20.
One Complete Specification Left: Aug. 10, 1920.
Complete Accepted: June 4, 1921.

164,051

PROVISIONAL SPECIFICATION.

No. 30,394, A.D. 1919.

Improvements in Power-driven Bicycles, Scooters, Tricyles and other Vehicles.

I, JOSEPH GLADSTONE OWEN, 1, Grafton Mansions, Grafton Street, Brighton, Journalist and Author, do hereby declare the nature of this invention to be as follows:—

This invention relates to improvements in bicycles, motor bicycles, scooters, tricycles and such like, and has reference to any light vehicle with two or more wheels wherein a mechanical device such as an internal combustion engine is employed to drive them.

I construct my machine in such manner that it may be used as an ordinary bicycle or motor bicycle or as an entirely power-driven vehicle. This I do by incorporating the engine with one, two, or more cylinders with the tubular or other shaped members of the frame and by utilising the interior of the metal or other tubes as receptacles or reservoirs for carrying oil and motor spirit or any other fuel or lubricating substitutes, for driving my engine, which forming the axis and incorporating the present crank bracket becomes with any existing types of frames, handle-bars, tubes and struts, an integral part of the whole, forming thereby a completely self-contained unit with the engine without any alteration of the present designs of bicycles, except when it is desired to apply the invention to a construction differing from them.

Having described the position of my engine and the use I make of the tubular members of the frame to form a part of the power unit and as receptacles or reservoirs for carrying fuel and oil, the means for transmitting the power of the engine to the road wheel or wheels may be carried out by means of a belt, chain, shaft, direct or indirect couplings, or other suitable devices, or by any of these processes through the medium of a clutch fixed or loose pulley, expanding and contracting pulley or gear mechanism separately attached to or forming part of the engine, or by mechanism contained in the body of the hub of the driven road wheel or wheels, or by any system for transmitting the power direct or indirect by means of water or oil, or any other liquid.

Dated the 4th day of December, 1919.

JOSEPH GLADSTONE OWEN.

PROVISIONAL SPECIFICATION.

No. 8266, A.D. 1920.

Improvements in or relating to Motor Vehicles.

I, JOSEPH GLADSTONE OWEN, Journalist and Author, of 1, Grafton Mansions, Grafton Street, Brighton, Sussex, do hereby declare the nature of this invention to be as follows:—

This invention is for improvements in

or relating to motor vehicles and has for one of its objects to provide for lightness in construction without sacrifice of strength. The invention is particularly applicable to motor bicycles but certain features of the invention are also applicable to other types of vehicle.

According to one feature of the invention a motor vehicle having a tubular framework is characterised in that the whole or a portion of the framework is employed as a container for the fluid supplying motive power to the engine of the vehicle. In applying this feature to a motor bicycle for example, it may be found convenient to shut off from internal communication with the remainder of the frame, the front forks, the rear stays or forks extending down from the seat pillar and the lower member of the frame extending between the crank axle and the rear wheel axle. Any suitable form of partition or closure could be employed for this purpose. Further, any convenient means may be employed for filling the frame with petrol or other fluid and for withdrawing the same for use as required.

According to another feature of the invention the engine cylinder or cylinders and/or the engine crank case are built into the vehicle framework (for example to constitute a continuation of one or more of the frame members) in such a manner as to take up a portion of the stresses set up therein during travel of the vehicle. A motor bicycle constructed in accordance with this feature of the invention may comprise a diamond-shaped framework with an internal-combustion engine situated at or towards the place in said framework which is normally occupied by the crank axle, said engine having one cylinder in alignment with and forming a continuation of that member of the framework which extends to the steering pillar and another cylinder in alignment with and forming a continuation of that member of the framework which extends towards the seat pillar, and said cylinders being connected together and forming the connection between the aforesaid members of the framework and the lower member of the framework which extends to the rear wheel axle. In one construction the parts are so arranged that the cylinders lie at an angle of 76° to each other. The cylinders may be connected together by the crank case and the latter connected to the lower member of the framework which extends to the rear wheel axle. Thus the cylinders and crank case will take up part of the stresses of the framework since they will replace the ordinary union or joint between the members of the framework in question. In this construction, if desired, the usual crank axle and pedals may be omitted.

The members of the framework with which the cylinders are in alignment may be connected together by a framework member which joins them immediately above their points of connection to the cylinders, and if desired another supplementary framework member may be provided between the member leading to the seat pillar and the member which extends between the crank axle and the rear wheel axle.

The cylinders may be hinged to the framework members to which they are appropriated if desired, by a suitable fork and pin joint or some other convenient construction, and it may be desirable in some circumstances that the connection between the cylinders and the framework members shall include a hollow ported (and preferably ribbed) member open to air currents caused by the travel of the vehicle. By this means heat from the cylinder heads may be prevented from reaching the tubular members of the framework and also pre-ignition prevented. The said hollow ported member may be ribbed both internally and externally if desired.

According to another feature of the invention the driven road wheel of the vehicle may be operatively connected to the engine through an axle which is—

(*a*) provided with pedals for manual operation, and is

(*b*) geared to the engine crank shaft to transmit drive therefrom to the said road wheel.

The invention, of course, is not limited to the employment of two cylinder engines, since in some circumstances single cylinder engines or multi-cylinder engines may be employed.

In applying the invention to a motor bicycle there may conveniently be employed a pair of tubes extending between the steering pillar and the seat pillar. Any convenient form of carburetting and ignition devices may be employed, and it will be understood, of course, that the invention is not limited to the precise constructional details hereinbefore described.

Dated this 19th day of March, 1920.

BOULT, WADE & TENNANT,
111 & 112, Hatton Garden, London, E.C. 1,
Chartered Patent Agents

PROVISIONAL SPECIFICATION.

No. 14,396, A.D. 1920.

Improvements in or relating to Motor Vehicles.

I, JOSEPH GLADSTONE OWEN, of 1, Grafton Mansions, Grafton Street, Brighton, Sussex, subject of the King of England, do hereby declare the nature of this invention to be as follows:—

This invention is for improvements in or relating to motor vehicles and has for one of its objects to improve the running efficiency thereof, that is to say the mileage per gallon of motive fluid used, and at the same time to provide for compactness of construction.

The invention is particularly applicable to motor bicycles having the features described in my prior Patent Specifications Nos. 30,394 of 1919 and 8266 of 1920, but it will be understood, that its application is not limited to such motor bicycles.

It has been proposed in motor vehicles to feed the whole or a portion of the air to the carburettor through a conduit or conduits having heating means combined therewith, and according to the present invention a motor vehicle embodying such an arrangement as this is characterised in that the said conduit or conduits constitute part of the vehicle framework. Conveniently a tubular portion of the framework of the vehicle to which the engine cylinder head is connected, is employed as the said air conduit and is open to atmosphere adjacent to the cylinder head. Thus air entering the conduit will become heated as it passes the cylinder head.

The invention is particularly applicable to motor bicycles comprising a diamond-shaped framework with an internal-combustion engine situated at or towards the place in said framework which is normally occupied by the crank axle, said engine having a cylinder in alignment with and forming a continuation of that member of the framework which extends to the steering pillar and/or a cylinder in alignment with and forming a continuation of that member of the framework which extends towards the seat pillar, and with a supplementary framework member extending between the steering and seat pillar framework members and connected to them above the engine cylinder or cylinders. A motor bicycle such as this is described in my aforesaid prior Patent Specification No. 8266 of 1920. According to a feature of the present invention, such a motor bicycle as this is characterised in that the said supplementary framework member carries or has built into it the engine carburettor, and that intermediate the latter and the engine cylinder or cylinders, the supplementary framework member and the portions of the steering and/or seat pillar framework members connecting it to the cylinder or cylinders form the aforesaid air conduit or conduits.

The carburettor employed may be of any suitable type, with or without a float feed, and the air conduits may be jacketed or lagged to keep them warm if found desirable. Those parts of the steering pillar and seat pillar framework members which extend upwardly from the supplementary framework member may be utilised to contain the motive fluid and suitable feed pipe connections between them and the carburettor are fitted.

The cylinder head may be formed with a hollow extension projecting into alignment with the framework member to which it is to be connected and ported adjacent the cylinder head. The outer end of the extension may be threaded in order to be coupled to the framework member. As foreshadowed in both of the aforesaid specifications the cylinder or cylinders may be arranged to constitute part of the vehicle framework and take up their share of the stresses therein.

During movement of the vehicle air will be drawn in through the aforesaid ports and fed to the carburettor. In passing through the ports it will, by reason of contact with the cylinder head, both be itself warmed and cool the cylinder head.

It will be appreciated that the invention is not limited to the precise constructional details enumerated.

Dated this 26th day of May, 1920.

BOULT, WADE & TENNANT,
111 & 112, Hatton Garden, London, E.C. 1,
Chartered Patent Agents.

COMPLETE SPECIFICATION.

Improvements in or relating to Motor Vehicles.

I, JOSEPH GLADSTONE OWEN, of 1, Grafton Mansions, Grafton Street, Brighton, Sussex, Journalist and Author, do hereby declare the nature of this invention and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement:—

This invention is for improvements in or relating to motor vehicles and has for one of its objects to provide for lightness and compactness of construction without sacrifice of strength. Another object of the invention is to improve the running efficiency, that is to say the mileage per gallon of motive fluid used. The invention is particularly applicable to motor bicycles but certain features of the invention are also applicable to other types of vehicle.

Many proposals have been made for decreasing the weight of and otherwise improving motor bicycles by special arrangement of the parts thereof; for example it has been proposed to employ a part of the tubular framework as a reservoir for the petrol or other motive fluid. It has also been proposed to arrange the engine cylinders in such a way as to constitute a part of the vehicle framework and to take up a portion of the stresses set up therein during travel, such cylinders being pivoted to the other parts of the vehicle framework. It has further been proposed in motor vehicles to feed the whole or a portion of the air to the carburettor through a conduit or conduits having heating means combined therewith. While these well-known features are embodied in the motor bicycle hereinafter described it will be clear from the following description that the disposition, arrangement and construction of the various parts include many important features of novelty whereby the efficiency, economy and reliability of the vehicle are enhanced.

According to one feature of the present invention a motor vehicle having one or more engine cylinders each secured to a member of the framework of the vehicle in such a manner as to form a continuation thereof, with the axis of the cylinder in alignment with the framework member, is characterised in that the connection between the cylinder and the framework member includes a hollow ported member open to air currents caused by travel of the vehicle. This ported arrangement may be used merely to cool the engine cylinder or it may be used both to cool the engine cylinder and to heat air for the engine carburettor and in this connection it may be pointed out that it is a feature of the present invention to provide a motor vehicle in which the whole or a portion of the air for the carburettor is fed thereto by a conduit or conduits having heating means combined therewith, which motor vehicle is characterised in that said conduit or conduits constitute part of the vehicle framework. Conveniently a tubular portion of the framework of the vehicle to which the engine cylinder head is connected, is employed as the said air conduit and is open to atmosphere adjacent to the cylinder head.

The invention is particularly applicable to motor bicycles comprising a diamond-shaped framework with an internal-combustion engine situated at or towards the place in said framework which is normally occupied by the crank axle, said engine having a cylinder in alignment with and forming a continuation of that member of the framework which extends to the steering pillar and/or a cylinder in alignment with and forming a continuation of that member of the framework which extends towards the seat pillar, and with a supplementary framework member extending between the steering and seat pillar framework members and connected to them above the engine cylinder or cylinders. According to a feature of the present invention, such a motor bicycle as this is characterised in that the said supplementary framework member carries or has built into it the engine carburettor. According to a further feature of the invention, the supplementary framework member and the portions of the steering and/or seat pillar framework members connecting it to the cylinder or cylinders form, intermediate the carburettor and the engine cylinder or cylinders, the aforesaid air conduit or conduits.

In one construction according to the

present invention the cylinders are hinged to the framework members to which they are appropriated and the hollow ported connection between the cylinders and framework members may be ribbed if desired to furnish an extra air contact surface and/or to strengthen the construction.

For a more complete understanding of these and other features of the present invention reference is directed to the accompanying drawings which show, by way of example only, certain constructional forms of motor bicycle according to the present invention. It is to be understood, however, that the invention is not limited to the precise constructional details enumerated.

In these drawings:—

Figure 1 is a side elevation of a motor bicycle according to the invention.

Figure 2 is a vertical section through a portion of the motor bicycle shown in Figure 1, Figure 2 being on a larger scale than Figure 1.

Figure 3 is a view partly in section on somewhat similar lines to Figure 2, but showing a modified construction. The scale of Figure 3 is less than that of Figure 2 but greater than that of Figure 1, and

Figure 4 is a cross-section on the line 4—4 of Figure 3.

Like reference numerals indicate like parts throughout the drawings.

Referring first of all to Figures 1 and 2, in the construction shown therein a two cylinder engine is employed which is situated at or towards the place in the cycle framework which is normally occupied by the crank axle. The engine comprises a crank case 10 and cylinders 11 and 12 arranged in the form of a V. The cylinder 11 is in alignment with and forms a continuation of a member 13 of the framework which extends to the steering pillar 14 and the cylinder 12 is in alignment and forms a continuation of a member 15 which extends towards the seat pillar 16. The cylinders 11 and 12 are connected together by the crank case 10 and they form the connection between the lower ends of the members 13 and 15. Referring more particularly to Figure 2 will it be seen that the cylinders each terminate in a cylinder head or extension 17 which is ported at 18 and is screwed at its end to receive a securing member 19 whereby it is attached to the lower end of the member 13, 15 repectively. It will be appreciated that the ports 18 are arranged as close to the end of the cylinder as possible but they do not communicate with the interior of the latter. Connecting the steering pillar 14 with the upper end of the member 15 are two tubes 20 and 21 and extending between the members 13 and 15 is a supplementary tubular framework member 22 which is connected to the members 13 and 15 just above the cylinders 11 and 12. The framework 22 carries or has built into it the engine carburettor 23.

Instead of or in addition to a separate petrol tank, the interior of the tubes 13, 15, 20 and 21 may be employed to store the petrol or other motive fluid. A suitable filling aperture may be provided at 24 and closure plugs provided in the interior of the tubes at 25, 26, 27, and 28 to confine the petrol to the desired parts of the tubes. To convey the petrol to the carburettor a feed-pipe 29 running close to the tube 22 may be provided.

The carburettor employed may be of any suitable type, with or without a float feed. In the construction shown, see particularly Figure 2, a dome shaped casing 30 is mounted in the tube 22. A conduit 31 in it communicates with the petrol feed-pipe 29 and the end of the conduit is controlled by the point 32 of a valve 33. The side walls of the dome 30 are ported at 34 and arranged about these walls is a ring 35 which is also ported. This ring 35 is controlled from the outside of the carburettor casing by a member 36, see Figure 1. The ports 34 communicate with the interior of the tube 22 which receives air from the atmosphere through the ports 18 adjacent the cylinder ends. The direction of flow is indicated by the arrows in Figure 2. This air in passing the cylinder heads is itself heated and acts to cool the cylinders. Heated air is thus supplied to the carburettor which tends to improve the efficiency thereof.

The valve 33 has a downwardly projecting boss 37 which is recessed to receive and slide upon the upper end of a controlling member 38. It is prevented from rotation relatively thereto by a pin and slot connection 39. The controlling member 38 is recessed to receive a spring 40 which presses at one end on the bottom of the recess in the member 38 and at the other end on the top of the recess in the valve 33. By this means the valve point 32 is kept pressed towards the end of the conduit 31. The valve point 32 is formed on the end of a stem 41 which projects downwards through the controlling member and is formed outside thereof with a handle or knob 42 for finger adjustment. The stem 41 is screwed into the valve 33

and by this means the point 32 can be adjusted longitudinally in the valve 33 without dismounting the carburettor. The controlling member 38 is formed with an outer shell 43 which is ported at 44 and which is received in a casing 45 mounted upon the framework member 22. The casing 45 has connected to it delivery pipes 46 leading to the engine cylinders and the ends of these pipes in the casing 45 are controlled by the shell 43. The controlling member 38 is provided with an external arm 47 whereby it may be operated by the rider of the cycle. By rotating the controlling member 38 the ports 44 can be brought into any desired relation with the apertures leading to the feed pipes 46 and thus the supply to the latter controlled. The valve 33 is provided with a seat 48 in the base of the dome 30, and the spring 40 tends to maintain the valve on this seat.

The valve 33 will normally tend to prevent the delivery of petrol from the conduit 31 and any delivery past the valve seat 48. On the suction stroke of the engine, however, the valve 33 will be pulled away from its seat, against the pressure of the spring 40, and will permit petrol to flow past the valve point 32 and mingle with the heated air coming through the ports 34. The petrol and air pass along the conical faces of the valve 33, which assists to mix them, and then pass to the interior of the casing 45, whence they are delivered to the pipes 46.

As has already been intimated any type of carburettor may be employed. The construction above described in detail is one which in some circumstances may be suitable as it has the advantage of not containing a float. It is to be understood, however, that this construction of carburettor is not claimed as being broadly novel.

The carburettor casing includes tubular extensions 49 which receive the ends of the parts of the framework member 22 and are securely attached thereto. In this way the efficiency of the framework member 22 as a tie or a strut is not impaired.

Referring now to Figures 3 and 4 a modified construction is illustrated therein in which the ported extension from the head of the cylinder is only employed to cool the cylinder and is not used to heat the air for the carburettor. In this construction the carburettor 23 is of substantially the same construction as already described, but its casing is provided with one or more air inlet apertures 50 communicating direct with the atmosphere instead of through the interior of the member 22.

The cylinder heads are each formed with upstanding lugs 51 which are spaced apart to provide a port or throughway 52 for the passage of air currents. The lugs 51 carry bosses 53 between which are pivoted the end 54 of a cap 55 on the lower end of the framework member 13, 15. This pivotal connection, is found to facilitate in some constructions the mounting of the engine on the framework.

Preferably the lugs 51 are ribbed as at 56 to provide extra cooling area and incidentally to strengthen the construction.

From the foregoing description it will be clear that the invention provides a construction of motor cycle which can be very lightly and compactly manufactured without the sacrifice of strength. The actual details of construction, however, may be modified in many respects without departing from the spirit and scope of the invention.

Having now particularly described and ascertained the nature of my said invention and in what manner the same is to be performed, I declare that what I claim is:—

1. A motor vehicle having one or more engine cylinders each secured to a member of the framework of the vehicle in such a manner as to form a continuation thereof, with the axis of the cylinder in alignment with the framework member, characterised in that the connection between the cylinder and the framework member includes a hollow, ported member open to air currents caused by travel of the vehicle.

2. A motor vehicle in which the whole or a portion of the air for the carburettor is fed thereto by a conduit or conduits having heating means combined therewith, characterised in that said conduit or conduits constitute part of the vehicle framework.

3. A construction of the subject matter of Claim 1 or Claim 2, in which a tubular portion of the framework of the vehicle to which the engine cylinder head is connected, is employed as an air heating conduit and is open to atmosphere adjacent to the cylinder head, for the purpose specified.

4. A motor bicycle according to Claim 1 or Claim 2, comprising a diamond-shaped framework with an internal combustion engine situated at or towards the place in said framework which is

normally occupied by the crank axle, said engine having a cylinder in alignment with and forming a continuation of that member of the framework which extends to the steering pillar and/or a cylinder in alignment with and forming a continuation of that member of the framework which extends towards the seat pillar, and with a supplementary framework member extending between the steering and seat pillar framework members and connected to them above the engine cylinder or cylinders, characterised in that the said supplementary framework member carries or has built into it the engine carburettor (for example 23).

5. A construction of the subject matter of Claim 4, characterised in that the supplementary framework member and the portions of the steering and/or seat pillar framework members connecting it to the cylinder or cylinders form intermediate the carburettor and the engine cylinder or cylinders, an air heating conduit or conduits.

6. A construction of the subject matter of Claim 1 or Claim 4, in which the cylinders are hinged to the framework members to which they are appropriated.

7. A construction of the subject matter of Claim 1 or Claim 4 or Claim 6, in which the hollow ported connection between the cylinders and framework members is ribbed as at 56, for the purpose specified.

8. A motor bicycle according to any of the preceding claims, having a diamond-shaped framework with an internal-combustion engine situated at or towards the place in said framework which is normally occupied by the crank axle, said engine having one cylinder in alignment with and forming a continuation of that member of the framework which extends to the steering pillar and another cylinder in alignment with and forming a continuation of that member of the framework which extends towards the seat pillar, and said cylinders being connected together and forming the connection between the aforesaid members of the framework in such a manner as to take up a portion of the stresses set up therein during travel of the vehicle.

9. A motor bicycle according to any of the preceding claims, whereof the tubular framework is employed as a container for the fluid supplying motive power to the engine of the bicycle, said framework comprising members 13, 15, 20 and 21, with closure plugs 25, 26, 27 and 28, a filling aperture 24, and a connection 29 to the engine carburettor.

10. The motor bicycle substantially as described or substantially as illustrated in Figures 1 and 2, or as modified in Figures 3 and 4 of the accompanying drawings.

Dated this 29th day of July, 1920.

BOULT, WADE & TENNANT,
111 & 112, Hatton Garden, London, E.C. 1,
Chartered Patent Agents.

Redhill: Printed for His Majesty's Stationery Office, by Love & Malcomson, Ltd.—1921.

[This Drawing is a reproduction of the Original on a reduced scale]

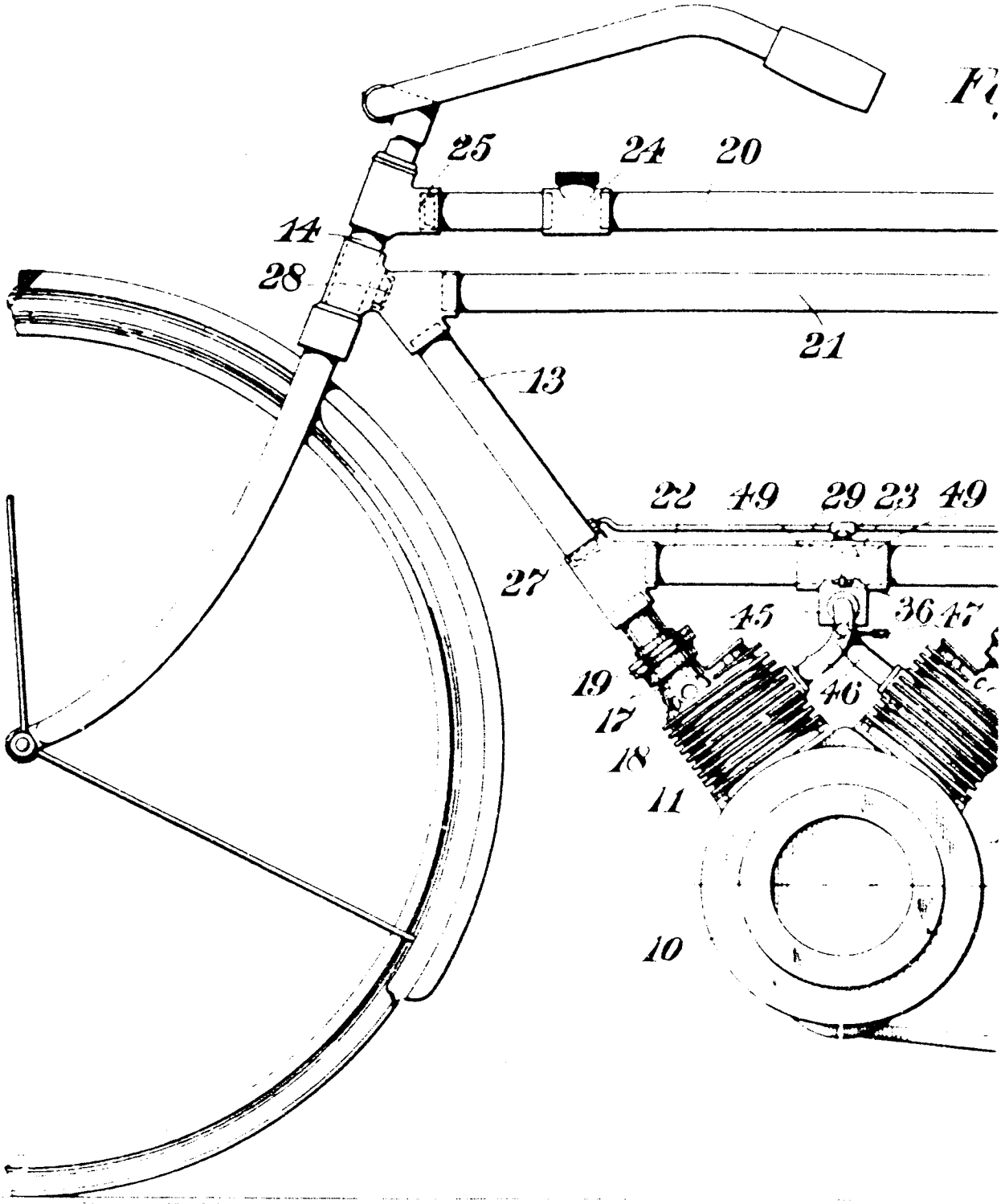

Fig. 1.

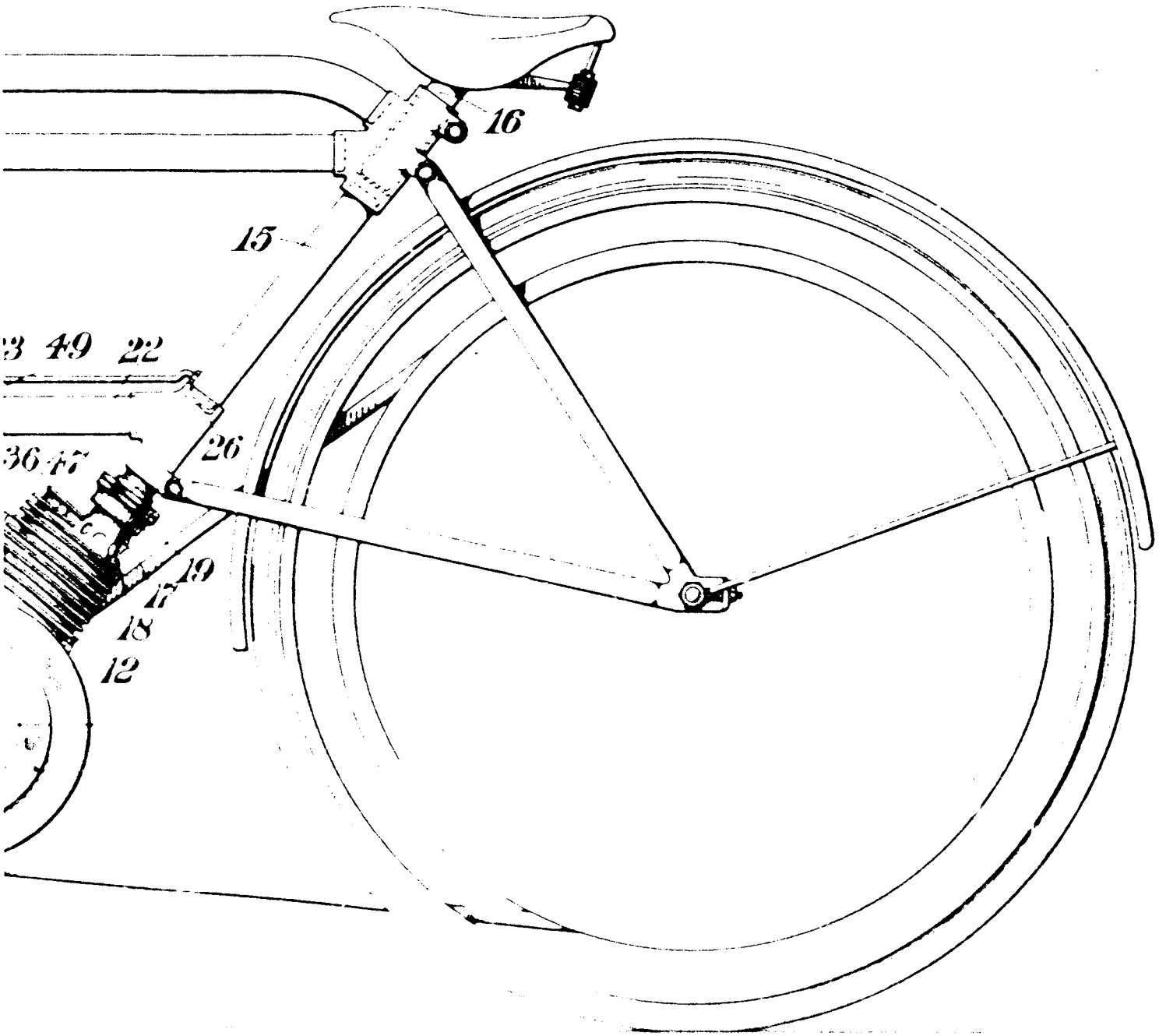

Fig. 2.

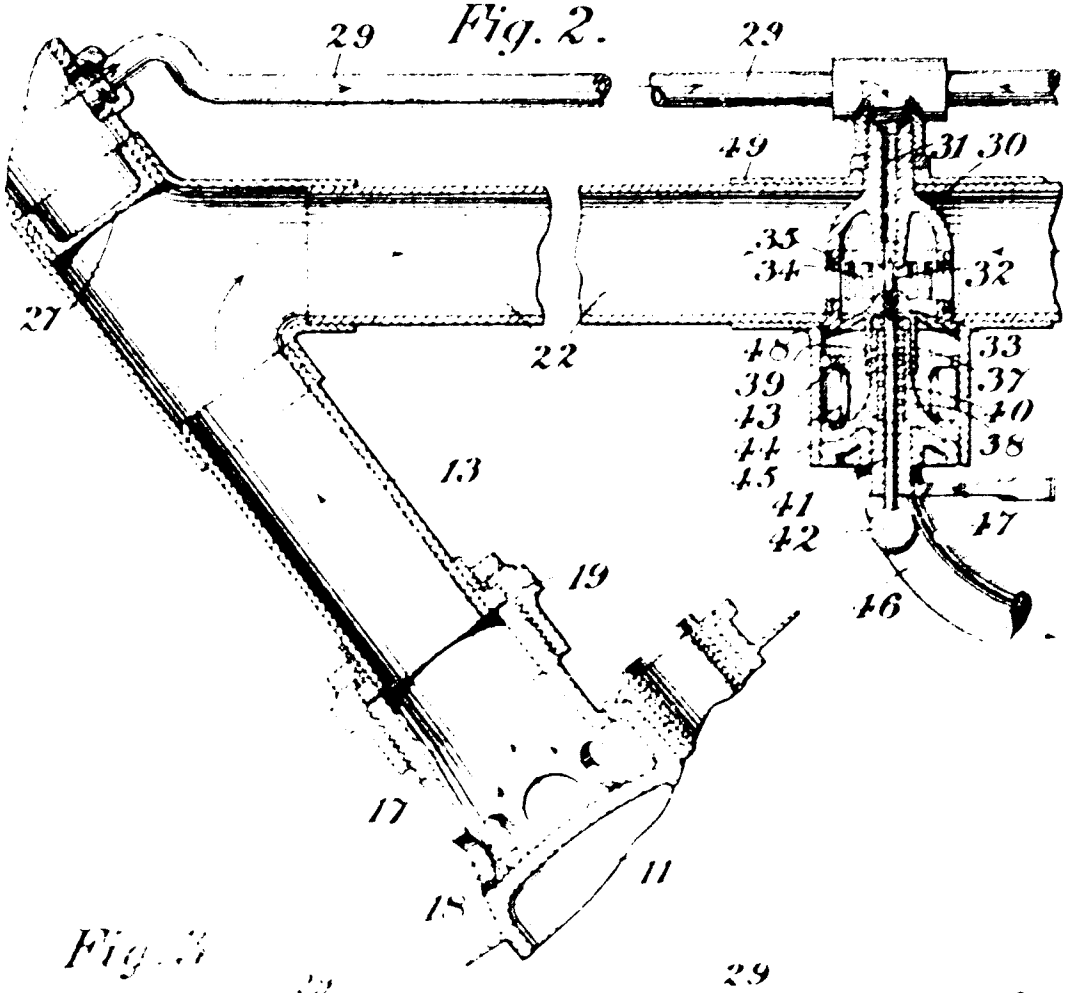

Fig. 3.

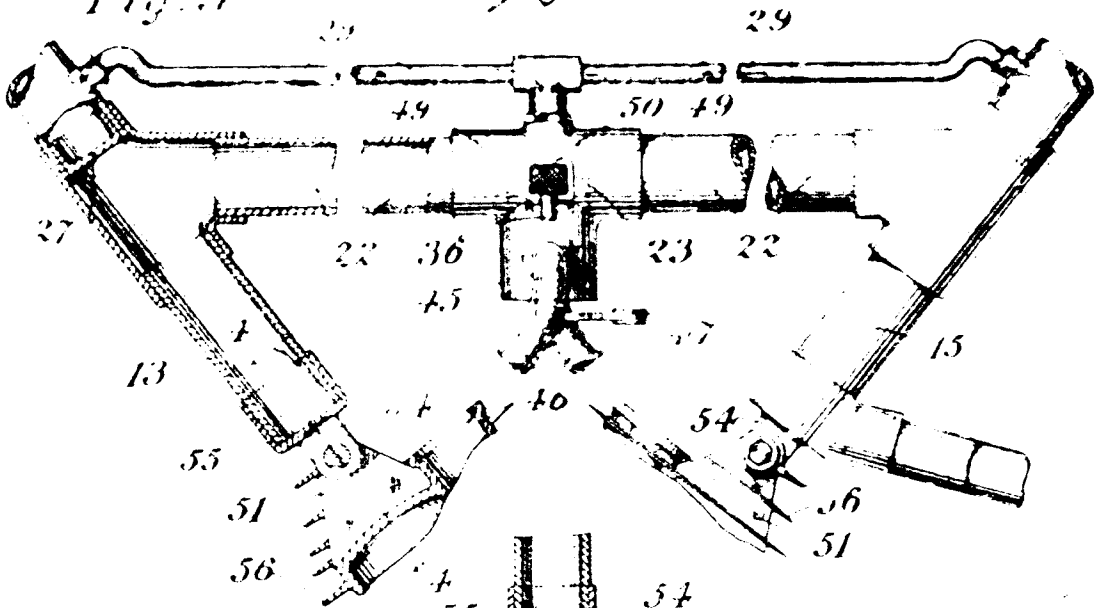

Fig. 4.